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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,785	03/04/2005	Mark W. Wanlass	NREL 02-01	7892

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7590

03/19/2007

EXAMINER

SONG, MATTHEW J

ART UNIT

PAPER NUMBER

1722

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/526,785

Applicant(s)

WANLASS ET AL.

Examiner

Matthew J. Song

Art Unit

1722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/4/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 3/4/2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. A copy of the Kae-Nune et al Non-patent literature document is missing.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 6 and 18 recites the limitation "the strained $\text{InAs}_y\text{P}_{1-y}$ buffer layer " in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Forrest et al (US 5,518,934).

Referring to claims 1 and 13, Forrest et al discloses a InP substrate, a compositionally graded step-graded region terminated **21, 23, 25** by a buffer layer **17**; an intermediate region **27, 29, 27**; a $\text{In}_{0.7}\text{Ga}_{0.3}\text{As}$ layer **11** deposited on the buffer layer, this reads on applicant's active layer because Forrest et al teaches the same material as applicant; and a capping layer **Z, 31** (Fig 1B, 5A, 6 and col 3, ln 1-40 and col 7, ln 25-30).

Referring to claims 2 and 14, Forrest et al discloses an InP substrate (col 3, ln 1-10).

Referring to claims 3 and 15, Forrest et al discloses a step graded InAsP buffer layers (col 3, ln 1-15).

Referring to claims 4 and 16, Forrest et al discloses a step graded buffer with a InP layer, $\text{InAs}_{0.1}\text{P}_{0.9}$ layer, $\text{InAs}_{0.2}\text{P}_{0.8}$ layer, $\text{InAs}_{0.3}\text{P}_{0.7}$ layer, this reads on applicant's step graded region is varied incrementally to accommodate the lattice mismatch between layers **9, 11** and **13** (col 3, ln 1-15).

Referring to claims 5-6 and 17-18, Forrest et al teaches a $\text{InAs}_{0.3}\text{P}_{0.7}$ buffer layer having a thickness of $1\ \mu\text{m}$ (Fig 1B)

Referring to claims 7-8 and 19-20, Forrest et al teaches a $\text{In}_{0.7}\text{Ga}_{0.3}\text{As}$ layer **11** deposited on the buffer layer **17**, this reads on applicant's active layer because it is the same material claimed by applicant.

Referring to claims 9 and 21, Forrest et al teaches a capping layer of InAsP **31** (Fig 1B and col 7, ln 20-35).

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Referring to claims 10 and 22, the limitation grown for electrical passivation is merely intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Forrest et al discloses forming a capping layer thus meets the claimed invention.

Referring to claim 11, Forrest et al discloses an active layer of $\text{In}_{0.7}\text{Ga}_{0.3}\text{As}$ and a step graded region with a buffer using InAsP .

Referring to claims 12 and 23, Forrest et al disclose vapor phase epitaxy (col 3, ln 1-5).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Song whose telephone number is 571-272-1468. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MJS
March 15, 2007

Matthew J Song
Examiner
Art Unit 1722



ROBERT KUNEMUND
PRIMARY EXAMINER